ABSTRACT

Every human being has characteristics and the characteristics inherent in physical or behaviour that can be identified by using biometrics. Biometrics is universal in every human being, biometrics has unique characteristics, because every human being has different characteristics of biometric and it's permanent. Along with the development, biometrics have been used in the field of personal security such as fingerprint recognition, optical recognition, facial recognition, because the biometric character cannot be erased and also difficult to be falsified.

In this final project, an analysis has been held about the application of biometrics by using *brainwave*. *Brainwave* recording uses Electroencephalogram (EEG) with visual stimulation in the form of images to bring up unique brainwaves. In processing the brainwave, it is carried out by preprocessing, feature extraction using the Discrete Wavelet Transform (DWT) method and classification using the Artificial Neural Network (ANN) method. The frequencies to be observed are *alpha* and *beta* frequencies on the AF7 channel.

Based on the test results the best performance showed in alpha signals with 99% of training accuracy and 74% of testing accuracy. The average required by the system as a whole for the computing process about 240.27 seconds. The performance of the system showed the application of a biometric system using EEG brainwave obtained optimal results.

Keywords: Alpha, Beta, Biometric, Brainwave, DWT, EEG, JST.